

A contribution to the study of the ground-beetle fauna (Coleoptera, Carabidae) from the Osogovo Mountain. I.

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Compared to the other high Bulgarian mountains (over 2000 m), Osogovo remains the one with the most poorly studied carabid fauna. Only 18 species and subspecies from 7 genera of this large beetle family have been reported (НЕДЕЛКОВ, 1909; БУРЕШ, КАНТАРДЖИЕВА, 1928; ДРЕНОВСКИ, 1928; КАНТАРДЖИЕВА, 1928; BREUNING, 1932; COIFFAIT, 1970; PAWLOWSKI, 1972, 1973; GANEV, 1984; HIEKE, WRASE, 1988). Thus, the main goal of the present paper is to add new data about the faunistics, seasonal activity and habitat conditions of the adult carabids occurring there.

Studied area

Osogovo Mountain (with the highest point Rouen — 2251 m) is well separated from the adjacent mountains by natural geographical barriers. Through Velbuzhdki Pass (1160 m) to north Osogovo Mountain is connected with the mountains from Kraishte Region, whereas by the Chernata Skala Col (970 m) and the region Piyanets to southeast it is joined to the mountains Vlahina, Maleshevska and Ograzhden. Over 2/3 from the mountain belongs to the Macedonian territory, as the rest part with area 497.5 sq. m lies in Bulgaria.

The annual average temperature by the Osogovo Chalet (1640 m) is 5.4° C (ГЪЛЪБОВ Ж. и др., 1977). The month with the lowest average temperature is January (— 3.0° C), whereas that with the highest is July (14.6° C). The average annual sum of rainfalls is 925 mm (Osogovo Chalet). May — June and October — November are periods with higher precipitation, while August — September are the driest one. The highest parts of the mountain are covered by snow usually from the third tenth of October till the third tenth of April.

The larger part of Osogovo Mountain is covered by deciduous mesophillous forest with predominance of *Fagus sylvatica*, as well as *Quercus conferta*, *Q. cerris* and *Q. sessiliflora*. The most part of the primary coniferous forests are replaced at the present time by the beech ones and grass plots, because of their clearing during the last 3—4 centuries. Thus, the upper forest border consists now mostly of beech. Highest parts (over 1800 m) are covered with juniper bushes and grass vegetation.

Material and methods

The present investigation is based mostly on materials collected by the author during the period April — November 1994 (the year omitted further on in the text). All localities with the exception of one (Republic of Macedonia — the region of Kriva Reka River near to Kruklya Village) are from Bulgarian part of Osogovo Mountain. Single specimens collected by other persons before 1994 have been enlisted, too.

The main part of the carabids has been collected by traps. 25 % water solution of ethylene glycol was used as a fixator. The traps were visited every 30 days.

The material is preserved in the collections of National Museum of Natural History (NMNH) — Sofia and Institute of Forests (IF) — Sofia.

The habitats visited by the author are the following:

H 1. Coniferous plantations above the park 'Hisarluka', 640—670 m, north of Bogoslov Village. *Pinus nigra* predominating, also *Pinus silvestris* and *Corylus avellana*.

H 2. Meadow above the park 'Hisarluka', 640—670 m, north of Bogoslov Village. Strongly anthropogenic influence (villas).

H 3. Along Kriva Reka River near to Kruklya Village, sandy fluvial soils, 660—680 m (Republic of Macedonia).

H 4. The valley of Eleshnitsa River, ca. 3 km from the Macedonian border, 950—1000 m.

H 5. Mixed forest (*Picea excelsa* and *Fagus sylvatica*) near to the ex-residence 'Yuchbounar', 900—950 m.

H 6. The bridge 'Tchekanetski' over Eleshnitsa River, near to the road fork Novo Selo Village — Rakovo Village — Sazhdenik Village, 950—1000 m.

H 7. North slope above the road Bogoslov Village — 'Trite Bouki' Chalet, 950—980 m. Middle age beech forest.

H 8. Popovi Livadi, 1230—1250 m. Beech forest.

H 9. Popovi Livadi, 1230—1250 m. Meadows.

H 10. Near to the road between 'Trite Bouki' Chalet — Novo Selo Village, 1340—1370 m. Deciduous mesophillous forest near to a big torrent.

H 11. Above the reserve 'Kyustendil', 1350—1400 m. Mixed forest.

H 12. Beech forests with meadows by 'Trite Bouki' Chalet, 1500—1570 m.

H 13. Around the bridge over Mlachka Reka River, close to Chervena Yabulka Village, 1440—1460 m. Fluvial humid biotop.

H 14. Old coniferous forest by 'Trite Bouki' Chalet, 1550—1580 m.

H 15. The road between 'Trite Bouki' Chalet — Peak Choveka, 1700—1800 m. Orophytic (woodless) zone — juniper bushes and grass vegetation.

H 16. Orophytic zone between Peak Choveka and Peak Shapka, 1850—2050 m.

List of the species

Calosoma (Campalita) auropunctatum (Herbst, 1782) — Peak Choveka, 2000 m, 31.VII.1980, 1 ♂, leg. J. Ganey, (NMNH).

Carabus (Morphocarabus) scabriusculus bulgarus Lapouge, 1908 — H 8 (V., 1 ♂). Collected in traps.

Carabus (Archicarabus) montivagus bulgaricus Csiki, 1927 — H 1 (traps: V., 3 ♂♂ and 5 ♀♀; VI., 1 ♂ and 3 ♀♀; VII., 38 ♂♂ and 35 ♀♀; VIII., 12 ♂♂ and 9 ♀♀; IX., 2 ♀♀; X., 17 ♂♂ and 15 ♀♀); H 7 (traps: X., 1 ♂); H 8 (X., 1 ♂); H 9 (traps: IV., 1 ♀); H 15 (1.IX., 1 ♀). Balkan endemic.

Carabus (Oreocarabus) hortensis Linnaeus, 1758 — H 1 (V., 3 ♀♀; VI., 1 ♂ and 1 ♀; IX., 1 ♂); H 6 (VII—IX., remains); H 7 (V., 2 ♂♂ and 4 ♀♀; VI., 2 ♂♂ and 1 ♀; VII., 3 ♂♂; VIII., 1 ♂ and 1 ♀; IX., 1 ♂ and 1 ♀); H 8 (V., 1 ♀; VI., 1 ♀; VIII., 2 ♂♂ and 1 ♀; IX., 2 ♂♂); H 9 (V., 1 ♀). All specimens collected in traps.

Carabus (Procrustes) coriaceus cerisyi Dejean, 1826 — 'Hisarluka' Place, 11.VI.1967, 1 ♀ (NMNH); H 1 (traps: V., 3 ♂♂ and 5 ♀♀; VII., 1 ♀; VIII., 1 ♀); H 6 (traps: V., 1 ♀); H 7 (traps: VIII., 1 ♂); H 8 (traps: VI., 1 ♀; IX., 1 ♂); H 9 (27.IV., 1 ♀; traps: VI., 1 ♀; IX., 2 ♂♂ and 1 ♀).

Leistus (Pogonophorus) rufomarginatus Duftschmid, 1812 — H 1 (V., 1 ♂); H 7 (X., 1 ♂). All specimens collected in traps.

Leistus (Pogonophorus) spinibarbis rufipes Chaudoir, 1843 — Peak Tash-Tepe, 2000 m (= Peak Kamen Vruh, 1996 m), 21.VI.1926, 2 ♀♀ (leg. N. Radev, NMNH); Peak Bozhderitsa, 2000 m, 21.VI.1926, 3 ♂♂ and 3 ♀♀ (leg. N. Radev, NMNH).

Notiophilus biguttatus (Fabricius, 1779) — H 1 (V., 21 specimens; VI., 1 specimen; IX., 3 specimens); H 7 (V., 3 specimens; VI., 1 specimen; X., 1 specimen.); H 8 (VI., 2 specimens; VII., 4 specimens). All specimens collected in traps.

Clivina fossor (Linnaeus, 1758) — H 10 (5.VI., 1 specimen, under trunk).

Asaphidion flavipes (Linnaeus, 1761) — H 7 (27.IV., 1 specimen, in meadow, with entomological net, leg. E. Manasieva).

Xenion ignitum (Kraatz, 1875) — H 7 (traps: V., 9 ♂♂ and 3 ♀♀; VI., 4 ♂♂ and 4 ♀♀; VII., 1 ♂ and 1 ♀; VIII., 1 ♂); H 8 (traps: VI., 1 ♀; VII., 1 ♂ and 1 ♀); H 11 (27.IV., 1 ♂). Balkan endemic.

Myas chalybaeus (Palliard, 1825) — H 1 (V., 38 ♂♂ and 32 ♀♀; VI., 4 ♂♂ and 7 ♀♀; VII., 1 ♂; VIII., 3 ♂♂ and 4 ♀♀; IX., 1 ♂ and 2 ♀♀; X., 2 ♂♂); H 7 (V., 3 ♂♂ and 3 ♀♀; VIII., 2 ♂♂; IX., 1 ♀); H 8 (V., 2 ♀♀; VI., 1 ♀; IX., 1 ♀). All specimens collected in traps.

Poecilus (Poecilus) lepidus (Leske, 1785) — H 4 (28.IV., 6 ♂♂ and 2 ♀♀; 5.VI., 1 ♂); H 6 (traps: VII—IX., 1 ♂); H 8 (traps: VI., 1 ♀); H 9 (traps: VI., 1 ♂; VII., 2 ♀♀); H 12 (10.VIII., 1 ♀).

Poecilus (Poecilus) versicolor (Sturm, 1824) — H 4 (28.IV., 2 ♀♀, under stones).

Pterostichus (Bothriopterus) oblongopunctatus (Fabricius, 1787) — H 6 (5.VI.1994, 1 ♂; traps: IV., 2 ♂♂ and 2 ♀♀; V., 7 ♂♂ and 5 ♀♀); H 8 (traps: V., 1 ♀).

Pterostichus (Melanius) nigrita (Fabricius, 1792) — H 3 (Macedonia, 16.VI., 2 ♂♂); H 11 (27.IV., 1 ♀); H 13 (2.IX., 1 ♀).

Pterostichus (Platysma) niger (Schaller, 1783) — H 6 (traps: V., 1 ♀); H 7 (27.IV., 1 ♂, under stone); H 10 (traps: V., 1 ♂); H 12 (10.VIII., 1 ♂; 26.X., 1 ♂); H 13 (2.IX., 1 ♀); H 14 (25.III., 1 ♂).

Abax (Abax) ovalis (Duftschmid, 1812) — H 8 (VI., 1 ♂). Collected in traps.

Abax (Abax) carinatus (Duftschmid, 1812) — H 1 (V., 2 ♂♂ and 2 ♀♀; VI., 8 ♂♂ and 3 ♀♀; VII., 5 ♂♂ and 5 ♀♀; VIII., 2 ♂♂ and 1 ♀; IX., 1 ♂ and 1 ♀). All collected in traps.

Agonum (Anchomenus) dorsale (Pontoppidan, 1763) — H 2 (27.IV., 1 ♂, under stone); H 8 (traps: V., ♀); H 9 (traps: V., 1 ♂ and 2 ♀♀).

Agonum (Platynus) scrobiculatum (Fabricius, 1801) — H 5 (25.III., 3 ♂♂ and 3 ♀♀); H 6 (traps: IV., 1 ♂; V., 2 ♀♀).

Agonum (Platynus) assimile (Paykull, 1790) — H 4 (28.IV., 1 ♂, under stone); H 5 (25.III., 1 ♂); H 6 (25.III., 3 ♂♂ and 2 ♀♀; 5.VI., 1 ♀; 26.X., 2 ♀; traps: IV., 3 ♂♂ and 4 ♀♀; V., 10 ♂♂ and 14 ♀♀).

Agonum (Agonum) sexpunctatum (Linnaeus, 1758) — H 13 (2.IX., 1 ♂).

Agonum (Agonum) viduum (Panzer, 1797) — H 15 (4.VI., 1 ♂ and 1 ♀).

Calathus (Calathus) fuscipes (Goeze, 1777) — Peak Tash-Tepe, 2000 m (= Peak Kamen Vruh, 1996 m), 21.VI.1926, 2 ♂♂ and 2 ♀♀, leg. N. Radev, det. Kryzhanowskij, NMNH); H 1 (27.IV., 1 ♂, under stone; traps: V., 1 ♀; VII., 2 ♀♀; VIII., 1 ♂ and 7 ♀♀; IX., 4 ♀♀); H 2 (27.IV., 1 ♂, under stone); H 6 (traps: VII—IX., 2 ♂♂ and 2 ♀♀); H 8 (traps: V., 4 ♂♂ and 5 ♀♀; VII., 1 ♀; VIII., 1 ♀; IX., 3 ♀♀; X., 1 ♂ and 7 ♀♀); H 9 (25.III., 2 ♂♂ and 2 ♀♀; traps: IV., 3 ♂♂ and 6 ♀♀; VI., 1 ♂; VII., 3 ♂♂ and 2 ♀♀; VIII., 2 ♂♂ and 5 ♀♀; IX., 17 ♂♂ and 45 ♀♀).

Calathus (Neocalathus) melanocephalus (Linnaeus, 1758) — around Iglika Chalet, 1300—1400 m, 10.VIII., 1 ♀, under stone, leg. P. Stoev; H 9 (traps: V., 1 ♀; VII., 1 ♂); H 12 (31.VIII., 3 ♂♂ and 1 ♀; 1.IX., 1 ♂; 26.X., 1 ♀); H 13 (2.IX., 2 ♂♂); H 14 (21.VII., 2 ♀♀); H 16 (traps: VII., 1 ♂ and 2 ♀♀; VIII., 1 ♀).

Calathus (Neocalathus) metallicus aeneus Putzeus, 1873 — Peak Tash-Tepe 2000 m, (= Peak Kamen Vruh, 1996 m), 21.VI.1926, 1 ♀, leg. N. Radev, NMNH); Peak Bozhderitsa, 2000 m, 21.VI.1926, 1 ♂, leg. N. Radev, NMNH); Peak Choveka, 2050 m, 31.VII.1980, 3 ♂♂ and 2 ♀♀, leg. J. Ganey; H 10 (traps: V., 2 ♀♀); H 12 (31.VIII., 1 ♀); H 14 (25.III., 2 ♂♂ and 4 ♀♀; 21.VII., 6 ♂♂ and 1 ♀); H 15 (4.VI., 1 ♀); H 16 (4.VI., 3 ♂♂ and 3 ♀♀, snow-drifts; 11.VIII.1994, 1 ♀, leg. P. Stoev; traps: VII., 21 ♂♂ and 59 ♀♀; VIII., 4 ♂♂ and 9 ♀♀). Balkan endemic.

Calathus (Neocalathus) erratus Sahlberg, 1827 — H 9 (25.III., 1 ♂ and 1 ♀).

Laemostenus (Pristonichus) terricola punctatus (Dejean, 1828) — H 1 (V., 1 ♀; VI., 1 ♀; VII., 3 ♀; VIII., 3 ♂♂ and 2 ♀♀; IX., 3 ♂♂ and 8 ♀♀; X., 4 ♂♂ and 3 ♀♀); H 7 (VII., 1 ♂ and 1 ♀; VIII., 2 ♀♀; X., 1 ♂ and 1 ♀); H 8 (X., 1 ♀; H 9 (VIII., 1 ♀). All specimens collected in traps.

Amara (Amara) ovata (Fabricius, 1792) — H 1 (V., 1 ♀). Collected in traps.

Amara (Amara) saphyrea Dejean, 1828 — H 1 (V., 3 ♂♂ and 3 ♀♀; VI., 1 ♂). All specimens collected in traps.

Amara (Amara) morio nivium Tschitscherine, 1900 — Peak Choveka, 2050 m, 31.VII.1980, 1 ♂, leg. J. Ganey.

Amara (Amara) aenea (Degeer, 1774) — H 2 (27.IV., 1 ♀, under stone); H 3 (Republic of Macedonia), 16.VI., 1 ♀; H 6 (5.VI., 1 ♂ and 1 ♀, under stones); H 9 (traps: V., 1 ♀).

Amara (Amara) tibialis (Paykull, 1798) — H 4 (28.IV., 1 ♂, under stone).

Amara (Celia) erratica (Duftschmid, 1812) — H 16 (4.VI., 2 ♀♀, snow-drifts).

Amara (Bradytus) apricaria (Paykull, 1790) — H 15 (4.VI., 1 ♂; 1.IX., 1 ♀).

Amara (Bradytus) fulva (O. F. Müller, 1776) — H 9 (IV., 1 ♀). Collected in traps.

Amara (Percosia) equestris (Duftschmid, 1812) — H 9 (IV., 1 ♂; VI., 1 ♂; VII., 3 ♂♂ and 2 ♀♀; VIII., 1 ♂; IX., 1 ♀; X., 3 ♂♂ and 1 ♀); H 16 (VII., 1 ♂ and 2 ♀♀; VIII., 4 ♂♂ and 5 ♀♀). All specimens collected in traps.

Anisodactylus (Anisodactylus) nemorivagus (Duftschmid, 1812) — H 9 (traps: IV., 1 ♀; VI., 2 ♂♂); H 11 (27.IV., 1 ♀, under stone).

Gynandromorphus etruscus (Quensel, 1806) — H 2 (27.IV., 1 ♀, under stone).

Stenolophus discophorus (Fischer-Waldheim, 1823) — H 3 (Republic of Macedonia), 16.VI., 1 ♀).

Egadroma marginata (Dejean, 1829) — H 2 (27.IV., 1 ♀).

Ophonus (Ophonus) cribricollis (Dejean, 1829) — H 9 (V., 1 ♂). Collected in traps.

Ophonus (Ophonus) signaticornis (Duftschmid, 1812) — H 4 (28.IV., 1 ♂, with entomological net, leg. E. Manasieva).

Ophonus (Metophonus) nitidulus Stephens, 1828 — H 6 (5.VI., 1 ♀, under stone).

Ophonus (Metophonus) gammeli (Schauberger, 1932) — H 1 (V., 1 ♂). Collected in traps.

Pseudophonus (Pseudophonus) rufipes (Degeer, 1774) — H 1 (traps: V., 3 ♂♂ and 3 ♀♀; VII., 2 ♀♀); H 6 (5.VI., 1 ♂, under stone); H 7 (traps: VII., 1 ♀); H 9 (traps: VII., 10 ♂♂ and 8 ♀♀; VIII., 1 ♂; IX., 1 ♂); H 10 (5.VI., 2 ♀♀, under stone and trunk; H 14 (21.VII., 1 ♀).

Harpalus (Harpalus) affinis (Schrank, 1781) — H 6 (5.VI., 1 ♂, under stone); H 9 (traps: IV., 1 ♂; VII., 1 ♀); H 12 (21.VII., 2 ♀♀, under stones); H 15 (4.VI., 4 ♂♂ and 1 ♀; 1.IX., 4 ♂♂ and 2 ♀♀); H 16 (11.VIII., 2 ♂♂, under stones).

Harpalus (Harpalus) rubripes (Duftschmid, 1812) — H 9 (V., 2 ♀♀). Collected in traps.

Harpalus (Harpalus) quadripunctatus Dejean, 1829 — 1300—1700 m, (23.VII.1992, 1 ♀, leg. V. Sakalian, det. D. Wrase).

Harpalus (Harpalus) serripes (Quensel, 1806) — H 3 (Republic of Macedonia, 16.VI. 1 ♀).

Harpalus (Harpalus) autumnalis (Duftschmid, 1812) — H 3 (Republic of Macedonia, 16.VI., 1 ♂ and 2 ♀♀); H 6 (5.VI., 1 ♂ and 1 ♀, under stones).

Harpalus (Harpalus) atratus Latreille, 1804 — H 1 (V., 3 ♂♂ and 2 ♀♀; VI., 9 ♂♂ and 5 ♀♀; VII., 2 ♂♂ and 1 ♀). All specimens collected in traps.

Harpalus (Harpalus) rufipalpis Sturm, 1818 — 1300—1700 m, (23.VII.1992, 1 ♀, leg. V. Sakalian, det. B. Kataev); H 9 (traps: VI., 1 ♂).

Harpalus (Actephilus) pumilus Sturm, 1818 — H 3 (Republic of Macedonia, 16.VI., 1 ♂ and 1 ♀).

Parophonus maculicornis (Duftschmid, 1812) — H 9 (V., 1 ♀). Collected in traps.

Callistus lunatus (Fabricius, 1775) — H 9 (V., 3 ♂♂ and 5 ♀♀). Collected in traps.

Licinus (Licinus) depressus (Paykull, 1790) — H 9 (traps: IV., 1 ♂; V., 2 ♀♀; VII., 1 ♂ and 1 ♀); H 12 (10.VIII., 1 ♀).

Lebia (Lebia) cruxminor (Linnaeus, 1758) — H 4 (28.IV., 1 ♀, with entomological net, leg. E. Manasieva).

Dromius (Dromius) schneideri Crotch, 1870 — 20.VII.1956, under bark of *Pinus peuce*, 1 specimen, leg. G. Tsankov, (IF). Known only from Rila Mountains — Govedartsitsi Village (WRASE, 1991) up to now.

Philorhizus notatus (Stephens, 1827) — H 7 (27.IV., 1 ♀, with entomological net, leg. E. Manasieva).

Cymindis humeralis (Fourcroy, 1785) — Peak Rouen, 2253 m, 21.VI.1926, 1 ♂, leg. N. Radev, det. Kryzhanowskij, NMNH); Peak Bozhderitsa, 2000 m, 21.VI.1926,

1 ♂ and 2 ♀♀, leg. N. Radev, det. Kryzhanowskij, NMNH); Peak Choveka, 2050 m, 31.VII.1980, 1 ♂, leg. J. Ganev; H 9 (traps: VI., 1 ♀); H 16 (traps: VII., 2 ♀♀).

All enlisted 62 species and subspecies are new for the Osogovo Mountain (60 of them were found on the Bulgarian area of Osogovo Mountain and 5 — in the Macedonian area). *Dromius (Dromius) schneideri* Crotch is found for second time in Bulgaria.

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Принос към изучаването на бръмбарите-бегачи (Coleoptera, Carabidae) от Осоговската планина. I.

Борислав ГЕОРГИЕВ

(Р е з ю м е)

Досега в литературата за Осоговската планина са посочени 18 вида и подвида бегачи (Carabidae) от 7 рода, като планината е най-слабо проучена в това отношение сред високите български планини (над 2000 м).

Целта на настоящото изследване е да даде нови фаунистични данни за карабидите от района, сезонната им активност и условията на живот на имагото. Освен материала, събран от автора през периода април — ноември 1994 г., са включени и екземпляри, събирани преди този период, съхраняващи се в колекциите на Националния природонаучен музей (NMNH) — София и в Института за гората (IF) — София. Основната част карабиди са събрани с помощта на капани, като е използван 25% воден развор на етиленгликол. Пробите бяха събирани на всеки 30 дни. Материалът от всички находища, освен едно (Република Македония — района на река Крива река, близо до село Кръкля) е от българската част на Осоговската планина.

Като резултат бяха установени 62 вида и подвида карабиди (Carabidae), нови за Осоговската планина. От тях 60 бяха намерени в българската част на планината, а 5 в македонската част. *Dromius (Dromius) schneideri* Crotch е намерен за втори път в България.